X15642.NatlPhase.ST25.txt SEQUENCE LISTING

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        Richard Dennis DiMarchi
        David Lee Smiley
        Lianshan Zhang
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       MODIFIED GLUCAGON-LIKE PEPTIDE-1 ANALOGS
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Xaa= Gly, Glu, Asp, Lys

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15

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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
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       or is absent
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       is absent
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x15642.NatlPhase.ST25.txt
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       absent
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       2-amino-histidine beta-hydroxy-
       histidine, homohistidine, alpha-fluoromethyl-histidine, or
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      Xaa = Tyr, Trp, or Phe
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x15642.NatlPhase.ST25.txt
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Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Lys Gly Arg Lys
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2-amino-histidine, beta-hydroxy-
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       alpha-methyl-histidine
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Xaa = Val, Phe, Tyr, or Trp

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x15642.NatlPhase.ST25.txt
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Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Lys Gly Arg Lys
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       Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val
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      Xaa = Pro, Ala, Lys, NH2 or is absent
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      Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent
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       Xaa = L-histidine, D-histidine, desamino-histidine,
<223>
       2-amino-histidine, beta-hydroxy-
                                       Page 18
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histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

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x15642.NatlPhase.ST25.txt
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       Xaa = Gly, Glu, Asp, or Lys
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      (44)..(44)
<223> Xaa = Ser, His, Lys, NH2 or is absent
<220>
<221>
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<222>
       (45)..(45)
      Xaa = Lys, NH2 or is absent
<223>
<400> 14
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x15642.NatlPhase.ST25.txt
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Pro Xaa 20 25 30
<210>
       15
<211>
       31
<212>
       PRT
       Artificial
<213>
<220>
<223>
      Synthetic construct
<220>
<221>
       MISC_FEATURE
<222>
       (1)..(1)
       Xaa = L-histidine, D-histidine, desamino-histidine,
<223>
       2-amino-histidine, beta-hydroxy-
       histidine, homohistidine, alpha-fluoromethyl-histidine, or
       alpha-methyl-histidine
<220>
<221>
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       (2)..(2)
<223>
       Xaa = Ala, Gly, Val, Leu, Ile, Ser orThr
<220>
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<222>
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       (6)..(6)
<223>
       Xaa = Phe, Trp, Tyr
<220>
<221>
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      (10)..(10)
Xaa = Val, Trp, Ile, Leu, Phe, or Tyr
<222>
<223>
<220>
<221>
       MISC_FEATURE
<222>
       (12)..(12)
      Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val
<220>
<221>
       MISC_FEATURE
<222>
       (13)..(13)
<223>
      Xaa = Tyr, Trp, or Phe
<220>
<221>
       MISC_FEATURE
       (14)..(14)
<222>
      Xaa = Leu, Phe, Tyr, or Trp
<223>
<220>
<221>
<222>
      MISC_FEATURE
       (16)..(16)
<223>
      Xaa = Gly, Glu, Asp, Lys
```

<220> <221>

MISC_FEATURE

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x15642.NatlPhase.ST25.txt
<222>
       (19)..(19)
<223>
       Xaa = Ala, Val, Ile, or Leu
<220>
<221>
<222>
       MISC_FEATURE
       (21)..(21)
<223>
       Xaa = Glu, Ile, or Ala
<220>
<221>
       MISC_FEATURE
<222>
       (24)..(24)
<223>
      Xaa = Ala or Glu
<220>
<221>
<222>
       MISC_FEATURE
       (27)..(27)
       Xaa = Val or Ile
<223>
<220>
<221>
       MISC_FEATURE
<222>
       (31)..(31)
       Xaa = Gly, His, Lys, or NH2 or is absent
<223>
<400>
       15
Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Lys Gly Arg Xaa
<210>
       16
<211>
       31
<212>
       PRT
<213>
       Artificial
<220>
<223>
       Synthetic construct
<400> 16
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly 25 30
<210>
       17
       39
<211>
<212>
       PRT
      Artificial
<213>
<220>
<223>
       Synthetic construct
<400> 17
His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Gly Pro Ser
20 25 30
                                       Page 27
```

```
Ser Gly Ala Pro Pro Pro Cys
<210>
       18
      39
<211>
<212>
      PRT
<213> Artificial
<220>
<223>
      Synthetic construct
<220>
<221>
      MOD_RES
       (39)..(39)
2,2'-dithiolbis(5-dinitropyridine) is attached to the thiol of
<222>
       Cys at position 39
<400> 18
His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu 1 	 5 	 10 	 15
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Gly Pro Ser 20 25 30
Ser Gly Ala Pro Pro Cys
35
<210>
       19
       32
<211>
<212>
      PRT
       Artificial
<213>
<220>
<223>
      Synthetic construct
<400> 19
His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Cys
25 30
<210>
       20
       32
<211>
<212>
       PRT
       Artificial
<213>
<220>
       Synthetic construct
<220>
<221>
       MOD_RES
<222>
       (32)..(32)
       S-sulfonate (SSO3) is attached to the thiol of Cys at position 32
<223>
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<400> 20

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Cys $20 \hspace{1cm} 25 \hspace{1cm} 30$

<210> 21

32 <211> <212> PRT

Artificial <213>

<220>

<223> Synthetic construct

<400> 21

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Lys $20 \hspace{1cm} 25 \hspace{1cm} 30$

<210> 22

<211> 32

<212> PRT

<213> Artificial

<220>

Synthetic construct <223>

<220>

MOD_RES <221>

<222>

(32)..(32) [3-(2-pyridyldithio)propanamide]amide is attached to Lys at position 32

<400> 22

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Lys 20 25 30

<210> 23

<211> 39

<212> PRT

Heloderma suspectum <213>

<220>

MISC_FEATURE <221>

<222> (1)..(39)

<223> Exendin-3

<400> 23

His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu Page 29

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser 20 25 30

Ser Gly Ala Pro Pro Pro Ser 35

<210>

39 <211>

<212> PRT

Heloderma suspectum

<220>

MISC_FEATURE (1)..(39)

<221> <222> <223>

Exendin-4

<400>

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser $20 \\ \hspace{1.5cm} 25 \\ \hspace{1.5cm} 30$

Ser Gly Ala Pro Pro Pro Ser 35